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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,205	04/02/2004	Karelle L. Cornwell	STL919960054US2/1737CIP	2205

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SAWYER LAW GROUP LLP
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EXAMINER

LIN, SHEW FEN

ART UNIT	PAPER NUMBER
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2166

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/817,205	Applicant(s) CORNWELL ET AL.	
	Examiner Shew-Fen Lin	Art Unit 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/20/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 9-18, 21-28 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-18, 21-28, and 31-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- a. This action is taken to response to amendments and remarks filed on 4/20/2007.
- b. Claims 1-6, 9-18, 21-28, and 31-33 are pending and claims 7-8, 19-20, and 9-30 have been cancelled. Claims 1, 12, and 23 are independent claims.

Withdrawal of Rejections

In view of the amendments, submitted on 4/20/2007, Examiner hereby withdraws the 101/112 rejections that were given in the previous Office Action.

Terminal Disclaimer

The terminal disclaimers filed on April 20, 2007 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of US Patent No. 6,754,656 has been received and is pending for approval. Until the terminal disclaimer has been approved, the double patenting rejection is maintained.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2, 13, and 24 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 11, and 21 of U.S. Patent No. 6,754,656 in view of Mohan (US Patent 5,247,672). Mohan discloses a transaction processing system and method without locking the committed pages (abstract). It would be obvious to access the page without requiring to obtain unnecessary locks as taught by Mohan for all the reasons disclosed by Mohan such as, "allows transaction to complete significantly faster where most of the data being accessed has been committed" (column 4, lines 68, column 5, lines 1-2).

The following table shows the claims in Instant Application that are rejected by corresponding claim(s) in U.S. Patent No. 6,754,656.

<i>Claims Comparison Table</i>		
	Instant Application	U.S. Patent No. 6,754,656
Claim #	1+2	1
Claim #	12+13	11
Claim #	23+24	21

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Mohan (US Patent 5,247,672).

As to claims 1, 12, and 23, Mohan discloses a method for controlling concurrency of access to data in a database system (column 1, lines 7-16), the method comprising:

partitioning a table in the database system into a plurality of partitions (storage are divided into pages, column 1, lines 46-50, storage objects include files, tables and index, column 5, lines 9-10, lock object, dividing database into pages including dividing tables since database is made of tables/table space, where the page is the smallest granularity of locking, column 6, lines 44-46);

receiving a lock request for access to data in the database system (column 10, lines 63-65), the lock request being a request for a page lock or a row lock for a corresponding row or page in the database system containing the data (column 1, lines 51-55, lines 65-67, column 6, lines 24-29);

identifying a partition of the plurality of partitions that contains the row or the page in the database system containing the data (select page, column 3, lines 14-18, column 4, lines 23-26);

associating the lock request with a partition lock on the partition that contains the row or the page in the database system containing the data (lock the page, Fig. 6, 710, column 4, lines 64-65, column 5, lines 29-31); and

accessing the data using the partition lock (access selected pages when lock is granted, column 2, lines 11-17, column 3, lines 22, read data on a page with obtained lock, Fig. 6, 713, column 4, lines 57-58).

Claims 1, 12, and 23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Crus et al. (US Patent 4,716,528, hereinafter "Crus").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time

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a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 9-18, 21-28, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mohan (US Patent 5,247,672) in view of Crus et al. (US Patent 4,716,528, hereinafter referred as Crus).

As to claim 1, Mohan discloses a method for controlling concurrency of access to data in a database system (column 1, lines 7-16), the method comprising:

partitioning a table in the database system into a plurality of partitions (storage are divided into pages, column 1, lines 46-50, storage objects include files, tables and index, column 5, lines 9-10, lock object, “the table”, where the page is the smallest granularity of locking, column 6, lines 44-46);

receiving a lock request for access to data in the database system (column 10, lines 63-65), the lock request being a request for a page lock or a row lock for a corresponding row or page in the database system containing the data (column 1, lines 51-55, lines 65-67, column 6, lines 24-29);

identifying a partition of the plurality of partitions that contains the row or the page in the database system containing the data (select page, column 3, lines 14-18, column 4, lines 23-26);

associating the lock request with a partition lock on the partition that contains the row or the page in the database system containing the data (lock the page, Fig. 6, 710, column 4, lines 64-65, column 5, lines 29-31); and

accessing the data using the partition lock (access selected pages when lock is granted, column 2, lines 11-17, column 3, lines 22, read data on a page with obtained lock, Fig. 6, 713, column 4, lines 57-58).

Mohan discloses storages are divided into pages, the storage containing database, files and other data objects (column 1, lines 13-15, column 5, lines 31-33, lines 63-65 but do not mention explicitly dividing a table into a plurality of pages (partition). However, a person of ordinary skill in the database processing art at the time of the invention will recognize that tables are the basic units for the database. Partitioning database into pages involving partitioning tables. Furthermore, Crus discloses dividing tables into equal-sized units called "pages" (Figure 2, column 3, lines 3-8).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mohan's disclosure to divide tables into pages (partitions) as taught by Crus for the purpose of locking individual page instead of tables (column 3, lines 9-24, Crus). The skilled artisan would have been motivated to improve the invention of Mohan per the above such that page locking provides concurrent access to tables (column 3, lines 22-24, Crus).

As to claim 2, Mohan discloses further comprising: responsive to the data being committed at a time of receiving the lock request, accessing the data without using the partition lock (compare page_LSN and committed_LSN, column 5, lines 17-21, if committed, read page without locking, column 5, lines 21-23).

As to claim 3, Mohan discloses the method of claim 1, wherein accessing the data using the partition lock includes serializing access to the partition at a lock state to protect against interference in the form of updates to the partition (FIFO, column 2, lines 11-17, column 6, lines 40-43).

As to claim 4, Mohan discloses the method of claim 3, wherein serializing access to the partition includes permitting lock requests access to the partition that are compatible with the lock state (column 6, lines 5-23).

As to claim 5, Mohan discloses the method of claim 1, wherein accessing the data using the partition lock comprises an application accessing the data through a single database system (one or more processes, Figure 10, T1-T4, column 3, lines 5-8, column 10, lines 66-67). Furthermore, Crus discloses multiple processes (applications) concurrently access a relational database system (column 2, lines 10-17).

As to claim 6, Mohan discloses the method of claim 1, wherein accessing the data using the partition lock comprises a second database system in a data-sharing environment accessing the data (shared database system, column 10, lines 63-65, lines 67-78, column 11, lines 1-6, Mohan, users 1, 2, 3, Fig. 3, Crus).

As to claim 9, Mohan discloses the method of claim 1, wherein the lock request is a request for a shared lock (column 5, lines 63-68).

As to claim 10, Mohan discloses the method of claim 1, wherein the lock request is a request for an exclusive lock (column 5, lines 63-68).

As to claim 11, Mohan discloses the method of claim 4 but does not explicitly disclose further including receiving a lockmax value, accumulating for an application, a number of lock requests for access to data in the database system by the application, comparing the number of lock requests with the lockmax value, and, when the number of lock requests equals the lockmax value, escalating the lock state.

Crus discloses receiving a lockmax value accumulating for an application, a number of requests for access to the records in the table by the application, comparing the number of requests with the lockmax value, and, when the number of requests equals the lockmax value, escalating the lock state (abstract, column 1, lines 64-68, column 2, lines 1-7, column 4, lines 3-19, column 5, line 48 to column 6, line 20).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mohan's disclosure to dynamically escalates the locking protocol on the tables from page to table locking as taught by Crus for the purpose of efficiently managing granularity lock based on the number of small granularity locks held on a resource reaches a specified limit (column 1, lines 64-68, column 2, lines 1-2, Crus). The skilled artisan would have been motivated to improve the invention of Mohan per the above to optimum locking between the concurrency (lock granularity) and system throughput (number of locks).

As to claims 12-18, are directed to a computer system carrying instructions for performing the methods of claims 1-6, 11 and are rejected along the same rationale.

As to claims 21-22, are directed to a computer system carrying instructions for performing the methods of claims 9-10 and are rejected along the same rationale.

As to claims 23-28, 33, are directed to a computer readable medium carrying instructions for performing the methods of claim 1-6, 11 and are rejected along the same rationale.

As to claims 31-32, are directed to a computer readable medium carrying instructions for performing the methods of claims 9-10 and are rejected along the same rationale.

Response to Amendment and Remarks

Applicant's amendments and remarks have been fully and carefully considered. In response to these amendments, another iteration of claim analysis, based on previously relied on references, and particularly addressing the newly amended limitation, has been made. Refer to the corresponding sections of the following claim analysis for details.

Applicant argues that, although Mohan discloses locking at different granularities including using row locks and page locks, Mohan, however, fails to teach or suggest associating a page lock request or a row lock request with a partition lock on a partition, as newly amended in claim 1. The Examiner respectfully disagrees.

As Applicant admits that Mohan teach various granularities of locking, Mohan also points out that "Systems which use page-level locking cannot lock less than a whole page, even if the transaction obtaining the lock only needs to access one of the records on the page" (column 1, lines 64-67). Using page locking (i.e. the corresponding partition locking, since database is

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divided into pages) instead of locking only the row, the database server can lock the entire page that contains the row. Therefore, Mohan teaches “associating a page lock request or a row lock request with a partition lock on a partition”.

Conclusion

Applicant’s amendment necessitated the new grounds of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Contact Information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shew-Fen Lin whose telephone number is 571-272-2672. The examiner can normally be reached on 8:30AM - 5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

June 27, 2007

Shew-Fen Lin
Patent Examiner
Art Unit 2166



HOSAIN ALAM
ADVISORY PATENT EXAMINER